CLAIMS:

What is claimed is:

1. A method of encoding a communication for transmission over a communications network, comprising:

selecting one of a plurality of vocoder algorithms, the selection based on at least one of the following criteria:

a) minimizing bandwidth required to transmit the communication;

b) minimizing a cost of transmitting the communication;

c) increasing the quality of the communication;

d) achieving compatibility with a receiving terminal; and

e) reducing latency;

encoding the communication with the selected vocoder algorithm; and

transmitting the communication signal.

2. The method of claim 1, wherein the selection of one of the plurality of vocoder algorithm occurs during a call setup.

3. The method of claim 1, wherein the communication is transmitted from a calling terminal to a called terminal without converting the communication to a waveform representation.

4. The method of claim 1, wherein a low bit rate vocoder algorithm is selected if bandwidth is scarce.

5. The method of claim 1, wherein a vocoder algorithm is selected which allows the call to be routed over a low cost network.

6. The method of claim 1, further comprising:

adding error correction to the transmitted communication signal.

7. The method of claim 6, further comprising:

compressing the encoded communication signal before adding error correction.

8. The method of claim 7, further comprising:

decompressing the encoded communication signal at a called terminal.

9. The method of claim 6, wherein the compression is performed by a lossless compressor.

10. The method of claim 6, further comprising:

selecting one of a plurality of compression algorithms to compress the encoded communication signal.

11. The method of claim 6, further comprising:

interleaving the communication signal to defeat jamming.

12. The method of claim 1, further comprising:

converting the encoded communication signal to a different coding standard by use of a compressed domain transcoder.

13. A smart vocoder, comprising:

a memory storing a plurality of vocoder algorithms;

a smart vocoder unit selecting an optimal vocoder algorithm from one of the plurality of vocoder algorithms; and

an encoder encoding a communication signal according to the selected vocoder algorithm.

14. The smart vocoder of claim 13, wherein the smart vocoder unit selects an optimal vocoder algorithm based on at least one of the following criteria:

a) minimizing bandwidth required to transmit the communication;

b) minimizing a cost of transmitting the communication;

c) increasing the quality of the communication;

d) achieving compatibility with a receiving terminal; and

e) reducing latency.

15. The smart vocoder of claim 14, wherein the smart vocoder unit is located in a communication terminal or a base station.

16. The smart vocoder of claim 14, wherein the smart vocoder is incorporated into a DSP.

17. The smart vocoder of claim 14, wherein the smart vocoder is included in one or more dedicated ASICs.